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**Mapping the Functional Surfaces in the Gelsolin Superfamily**

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**ABSTRACT:** CapG is a calcium activated F-actin capping protein that is prominent in human macrophages. The crystal structure of a mutant form of human macrophage capping protein (mCap G) has been determined by MIR and refined to 2.5 Å resolution. The structure reveals a similar domain organization to N-terminal half of gelsolin. All three domains of the mCap G have a central five-stranded beta-sheet sandwiched between two  $\alpha$ -helices. In the structure two domains (S2 and S3) are packing together to form a compact globular unit while S1 extends away via a 17 residues linker. To analyze  $\text{Ca}^{2+}$ -dependent conformational changes which accompany the mCap G activation, two  $\text{Ca}^{2+}$ -binding sites were identified by  $\text{Eu}^{3+}$  soaks. Analytical centrifugation experiments to confirm a model of mCap G activation are currently underway.